

THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

approach

February 2002



Birds! Duck!
Using the Noggin
Take a Seat

approach

The Naval Safety Center's Aviation Magazine

February 2002 Volume 47 No. 2

On the Cover FA-18 Hornet expending flares
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Mission Statement

Mishaps waste our time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness.

This magazine's goal is to help make sure that personnel can devote their time and energy to the mission, and that any losses are due to enemy action, not to our own errors, shortcuts or failure to manage risk.

We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is hazardous enough; the time to learn to do a job right is before combat starts.

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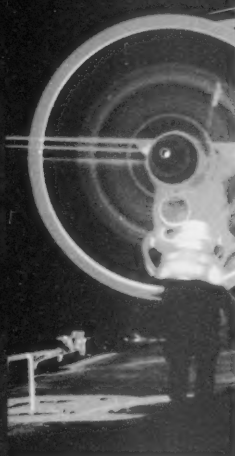
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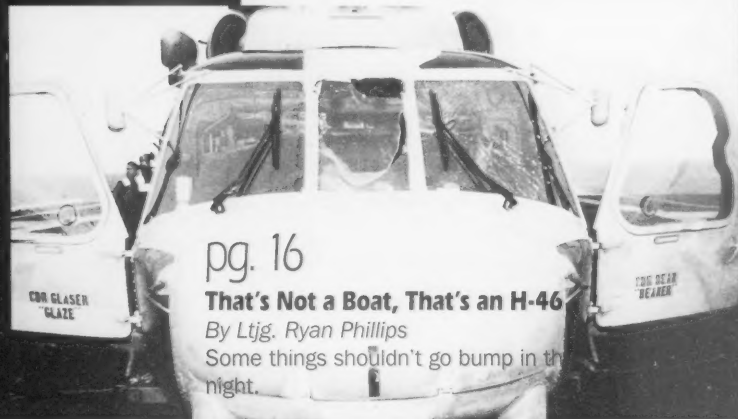


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Thanks for helping with this issue...

LCdr. Larry McElvain, HC-11

Lt. James Meadows, HSL-48

LCdr. Kent Mathes, VAQ-140

LCdr. Edwin Henderson, VAQ-135

Lt. William Berry, VAW-116

LCdr. Anthony DeSmet, VF-103

LCdr. Michael Consoletti, VR-55

LCdr. Eugene Young, VS-22



By LCdr. John Richmond

It started out as a good-deal ACM hop. It would end as a day that a young, 250-hour, Cat I pilot and I never would forget. It was a cold, clear and blustery January day at NAS Oceana, with the winds at a steady 25 knots out of the northwest. After briefing an SFWT 1 v 1, we put on our exposure suits and manned-up aircraft 106.

Visibility was unlimited—perfect for ACM. After clean and dry checks, we contacted Giant Killer and kicked out into combat spread for routine G-warm and weapons checks. After a quick snapshot drill, we rolled into the butterfly sets. The flight was going like clockwork.

The first set started at 22,000 feet and 350 knots. After a gentleman's left to left, the fight was on. As we passed through 180 degrees of turn, we called, "Knock it off" because of a master caution light and an associated CIU (converter interface unit) advisory light. We reset a circuit breaker and were ready to go. Again it was a left to left. We reversed to a right-hand turn and dug hard, nose low. The bandit was making a

nose-low, left-hand turn. Merging at the bottom of the circle, the bandit made a check-turn left across our tail. My pilot once again reversed right, unloaded the jet, and, with as much right stick and rudder as he could muster, started a max-performance split-S across the circle. It was classic, one-circle, nose-low, aggressive pressure.

At first the jet performed well, but around 17,000 feet and 280 knots, it seemed stuck in a nose-low, right-hand turn. At 60 degrees AOB and 45 degrees nose low, the master caution light suddenly illuminated. I called, "Knock it off," as my pilot battled the aircraft. Seeing an uncommon hyd press light, he looked over at his hydraulic gauges only to find the flight-side needle resting comfortably at zero. I instinctively reached down, started squawking emergency, and switched the TACAN to Oceana. My pilot said the bi-directional hydraulic pump was secured, the wings were manually full forward, and flight isolate was selected. Throughout all of this, he had difficulty setting the wings straight and level. The true nature of our problem eluded us for only a few more moments.

This Time I Saved the Jet

I was digging out the PCL to begin emergency procedures, but my pilot was having difficulty getting the aircraft to head home. We bottomed out at 13,000 feet, and, while in a semi-controlled turn towards home, we discovered our port rudder was fully deflected starboard. We had a rudder hardover. This occurs when a rudder has deflected to full throw because of an actuator failure.

At this point, we started to take stock of what we knew was working. The combined side still was pressurized, so our landing gear and brakes were OK. I radioed the situation to our lead and began coordinating with approach control. As our lead got a closer look at our rudder, we could see the problem in our mirrors: The port rudder was deflected full-throw to the right, and our starboard rudder was neutral. To make things worse, the starboard rudder would not oppose the bad rudder—the left pedal would not budge. Now it all made sense, and it wasn't good. The plane was flying about 15 degrees, left wing down, in a very uncomfortable slip.

We were dumping fuel and almost had finished the hydraulic section of the PCL, so I called base and asked for the skipper. Deep in the

back of my mind, I had a feeling we eventually would be forced to eject. Another Tomcat squadron had lost a jet to the same rudder-hardover condition. They had tried to divert but the engine failed after prolonged, uncoordinated flight. We had 60 miles to go in the same condition.

At 30 miles from Oceana, we were at 15,000 feet, 250 knots, and crossing the beach line. That was comforting—an ejection over land in January was far more appealing than an ejection over a rough ocean. We were tracking toward Oceana and decided to try for Fentress Airfield, figuring that aircraft wreckage in the open countryside was better than in some neighborhood around Oceana. The skipper was now on the radio and his recommendation was Oceana. It made sense; medical attention existed there, and the winds were right down runway 32 at 20 knots (there was too much crosswind for Fentress).

Could we even attempt a landing? Any attempt at turning the airplane to the left was futile. With the other rudder unable to counter the bad one, more left stick only increased uncoordinated flight. Anybody who has missed a

To make things worse, the starboard rudder would not oppose the bad rudder—the left pedal would not budge.

TARPS point and stands on top rudder can understand how we were flying.

We were now 15 miles east of Oceana at 18,000 feet (over the ocean for controllability checks), still trying to figure out how to land with the wings roughly level. Every time we went wings level, the jet picked up a little more than a standard-rate turn to the right. Our gas was now 7,500 pounds (having secured dumps at 9,000 pounds). Gas was not critical, but time was. We were operating on a single hydraulic system, and who knew how long that would last? If we lost hydraulics, we were shelling out. We and the guys in the ready room were trying to think of anything. We thought of trying asymmetric thrust. With the Tomcat engines 9 feet apart, asymmetric thrust was a known contributor to out-of-control flight. Every Tomcat pilot was intimately familiar with keeping the throttles matched to avoid those destabilizing inputs. In the last Tomcat rudder-hardover mishap, the engineers in the aircraft division at NAWC (the guys with the 20-pound heads) had found that in the trainer, asymmetric thrust helped alleviate the uncoordinated flight of a rudder hardover. It now became the plan and our only hope.

Reciting out loud as he did it, my pilot slowly retarded the left engine to idle, since it was the one contributing to the right yaw. It was working! With the wings roughly level, full-asymmetric thrust, and half-throw left lateral stick, the jet tracked straight.

Now to dirty up. With airspeed at 230 knots, we put down the gear. Three down and locked, and the hydraulic system was holding. Tire speed was 190 knots—we needed to get below that. As we decelerated through 180 knots, the flaps were set to half. We had three down and locked, with an approach speed of 155 knots. Time to land. Performing three, 360-degree, right-hand turns out of 18,000 feet, we arrived on extended centerline at 5,000 feet, 17 miles from the field. Heading inbound, we emergency

extended the hook and now addressed what we would do once on deck.

We were staying on deck—arrestment or not. We were certain the jet, once on deck, would immediately veer right when both engines went to idle. Nosewheel steering would not be functional because of the stuck rudder pedals. Since it was January and the ground was frozen, we were confident in the jet's off-road capability. A hook skip and go-around was not an option.


Paddles was now on the radio, and we briefed him. We were still tracking straight, and the winds were right down the runway. Our groundspeed at touchdown would be about 135 knots. Calling the ball with 5.5, my pilot flew the pass of his life. The jet caught the wire, veered hard to the right, and came to a full stop with the left mainmount 15 feet off the right side of the runway. We had pulled it off.

The engines on post-flight were FOD-free. We discovered that a catastrophic failure of a bolt and stop plate in the rudder actuator had caused the port rudder to go full-throw to the right. The other rudder was never going to oppose the bad one.

By far, the biggest lesson learned was that mishap investigations work. We all read the last Tomcat rudder hardover and learned from it. Some smart engineers had examined asymmetric thrust as a possible way to reduce uncoordinated flight, and that nugget of information was critical.

Compound emergencies will put you in uncharted waters. This emergency was not in NATOPS (although it is now). We did nothing strictly by the book, except the hydraulic-failure procedures. Everything else was an attempt at common sense.

The ready room and our lead stayed out of our cockpit and only came in when asked. They were there when we needed them and were never a hindrance.

In our haste to land, we didn't do a practice waveoff for fly-away characteristics. The asymmetric-thrust-limiting system still was engaged. If we had needed full burner on the starboard engine, it would not have been there. 

LCdr. Richmond flies with VF-213.

Demon HAC

By LCdr. Kelly Schoen

We had a HAC on our cruise whom everyone despised. All the H2Ps would play cards, and the loser had to fly with the demon HAC. I won at cards most of the time, but, when I did lose, I would trade my flight for standing an extra shore-patrol watch for one of the other H2Ps.

The OinC finally noticed my scheduling prowess, and I was tapped for a 10-hour day with the Demon. We were to service the battle group with vertrep and passenger transfers. Crew coordination with the Demon was so bad that none of the H2Ps would talk to him. The most anyone would offer was “yes” or “no.” His favorite thing to hiss when you got in the aircraft was, “Don’t touch anything unless I tell you.”

“Don’t touch anything unless I tell you.”

After 10 hours, we were tired. We were waiting on a retro pick-up and stopped for gas aboard a nearby ship. After we had filled up, the HAC lifted the H-46 into a hover. He was telling a joke as he pedal-turned the aircraft perpendicular to the ship. He pulled a little power and pushed the nose over, supposedly transitioning to forward flight. Upset that no one was laughing at his joke, he turned his head to look down the tunnel at the crewmen to see their reaction. As his head turned to face the back of the helo, the aircraft


began settling toward the water. He had pushed too much nose-over without enough corresponding power. I paused but didn’t want to say anything because I didn’t want another chewing out.

The water approached fast. I called, “Power,” and grabbed the collective and stick. We had water spray in our rotor wash and had descended well below flight-deck level.

The tower was screaming at us to state the nature of our emergency. “We thought you lost an engine,” they said. How could I tell them we almost drove a perfectly good H-46 into the water because the HAC was telling a joke,



Photo by PHAN Alisha Clay
Manipulated by Matthew J. Thomas

facing the tunnel, and the copilot was simply watching the whole event unfold? 

LCdr. Schoen flies with VR-55.

Teaching New Tricks

By LCdr. Mike Rayfield

I was scheduled as the mission commander for a double-cycle flight in our trusty Hummer, early in our WestPac cruise. The mission for both cycles was to QA other air controllers in the battle group during an air defense exercise. The unbriefed mission, as I understood it, was to get a trap-cat-trap (TCT) to keep our pilot and copilot current. I would be sitting in the radar officer seat, evaluating our potential combat information center officer as he finished the final



Old Dogs

stages of qualification for mission commander. The air control officer was a designated mission commander with cruise experience. A senior department head sat in the pilot seat, and he had a nugget copilot.

During preflight, the pilot noticed one of our outboard-rudder caps had a ding in it, which obviously came from one of the bomb racks stacked in the Hummer hole. After downing the aircraft, we received word from our flight-deck coordinator (FDC) of a comer aircraft that would be ready in 10 to 15 minutes. The crew walked to the other aircraft and hung out near the main entrance hatch to the Hawkeye, waiting the much anticipated "thumbs up" from our FDC. As the maintenance officer, I knew the AE working on this downing discrepancy was the best man for the job, and if it could be fixed, this Sailor was the one to fix it. After a few minutes, my fellow department head said we would not make this launch, and we should have the duty office slide our event. We also let our troopers know so there was no unneeded pressure to make the launch. Meanwhile, the rudder cap from our original bird had been replaced, and the plane was up.

The crew preflighted and began getting ready for engine starts. Once the engines were online, we were told to shut down because our flight had been cancelled. As the engines were put into low-speed ground idle, we got word we were not cancelled but would be launching on the next go in one hour. In addition, my ACO's ICS was inop, so I kicked him out of the aircraft because of safety of flight. I didn't want any crew member who could not talk on ICS to go flying. At this point, my PCICO spoke up and said he didn't feel comfortable with the aircraft switches, the aircrew musical chairs, and the whole evolution, and he recommended we not go fly. I knew we were within SOP for a maximum of three man-ups and I also knew the real reason for going flying, so I disagreed with his recommendation and conferred with the plane commander. The pilot and copilot agreed we were not in an unsafe situation and recommended we continue and get airborne. As the mission commander, it was my obligation to get to the real reason why this PCICO did not want to go flying, or at least address the situation and get him on my side. Right? Wrong. It was

my duty to get his input on why he didn't want to go flying, but there was no way I was going to get him in a comfort zone that would get rid of his objections. In my 14 years in the Navy, I never have encountered a situation where everyone except one crew member feels safe to go flying. I offered the option of the PCICO getting out of the aircraft, with me remaining in the back as the mission commander. This was perfectly legal, and because our goal was a TCT, I thought it perfectly reasonable. The PCICO pointed out he should not be put on the spot to get out of the aircraft and not be a team player, and that, maybe as the maintenance officer, I had a special interest in not wanting to bust a sortie. The PCICO decided to stay, and we got airborne.

After these events, I reevaluated what I had done as a mission commander to let this happen and how I could prevent it from recurring. I was to blame for not explicitly spelling out the reason for the flight and explaining more thoroughly our go or no-go criteria. Since I never had faced this dilemma, there was no need to brief it in the crew coordination and ORM portion.

At what point does the decision to fly in a multi-seat aircraft become a democratic one and not one by the mission commander or plane commander? Does one crew member have veto power? From my experiences, the decision rests on the plane commander for any aircraft and safety-of-flight-related issues and with the mission commander for any weapon-systems problems. A dialogue between these people should solve any problems that arise. Although this was briefed and a good working relationship between the pilot and mission commander was established, it did not help solve this incident. Sometimes old dogs do learn new tricks.

LCdr. Rayfield flies with VAW-116.

BIRDS! Duck!



By Ltjg. Don Gaines

We were on the final leg of a three-leg, round-robin flight around Texas, near the end of T-34C intermediates. The previous two flights were mostly in and out of clouds, but since these were RI flights, I wasn't too concerned. However, climbing through 1,000 feet on the final leg, we were in the goo. As we continued our climb, we reached VFR-on-top by 3,000 feet. While my instructor listened to the HIWAS for weather updates, I was dodging thunder cells.

Once we were told to switch to center for the PAR into NAS Corpus Christi, we both breathed a sigh of relief. When I contacted center, they told us there were lots of birds in the area. I looked up and noticed a flock off to our 3 o'clock low, but they were no factor.

Calling them out, I went right back to the task at hand, flying the approach—this was for a grade, you know. I trimmed out the aircraft and was setting up my instruments for the TACAN approach when I looked up to see something very bad. A wall of birds was flying right at us. I had enough time to yell over the ICS, "Birds!" and then ducked behind the console. A second later, I could feel the rush of air in the cockpit and things flying around as we passed through the flock.

I sat there for a few seconds just watching everything move in slow motion when I heard my instructor yelling over the ICS, "Are you OK?" Looking up, I saw the windscreen had a large hole in it. One piece was still connected to the aircraft but flapping in the wind. The



I told my instructor a bird had just hit us. Laughing, he called back, "No kidding, most of it is sitting in my lap."


magnetic compass, which sat on the console, and one of the mirrors were now missing, and the other mirror was shattered. As I looked into the shattered mirror, I could see blood covering my face and helmet, and I noticed a cut on my lower lip. I raised my visor and noticed the distinct line of blood where the visor ended. Besides the cut lip, I was in good shape and finally called back that I was fine. Then, as any good student would, I told my instructor a bird had just hit us. Laughing, he called back, "No kidding, most of it is sitting in my lap."

He took the controls, and while I hit 7700 on the transponder, he declared an emergency. Center gave us a discreet squawk when another aircraft called up asking for our working area. They thought we were simulating this. Center immediately called over guard for all aircraft to maintain their positions, while they

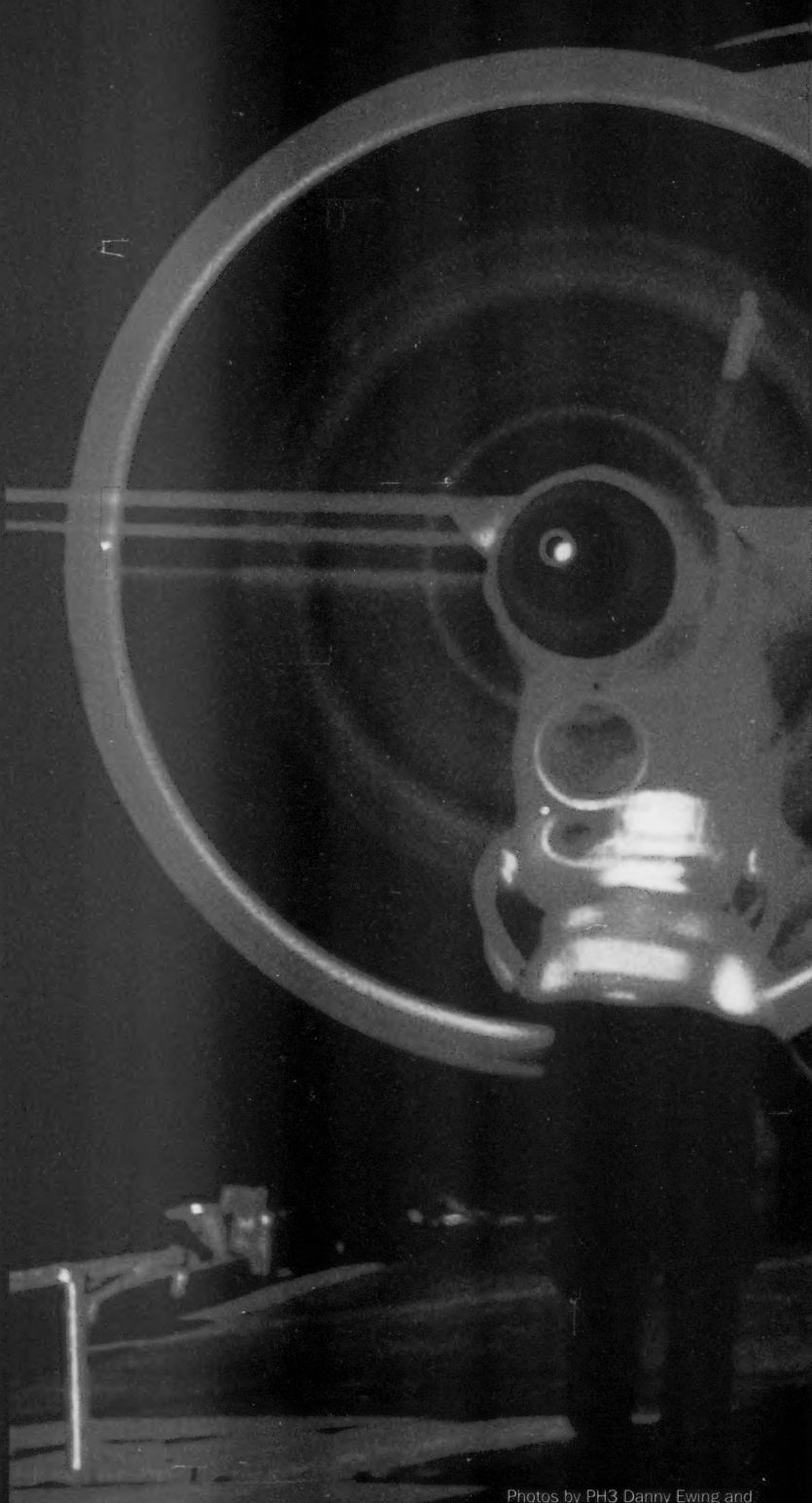
handled an actual emergency. As the radio calls continued, with aircraft offering their assistance, we now started working the task at hand—getting on deck. Looking at my console, my instructor asked me to move the approach plates. We still had all the VFR and IFR charts and approach plates sitting on the console. Grabbing my flight bag, I quickly stuffed all of them into it. I then pulled out the pocket checklist for bird strikes, and my instructor called for a climb to 5,000 feet. He said we needed to check out the aircraft and see if we could land it or if the birds had damaged anything underneath. When he said to be prepared to ditch if the aircraft rolled, I kept thinking how I couldn't believe this was happening to me.

As we slowed to landing airspeed, I felt my heart beating. He lowered the gear, and we sighed in relief as we saw three-down-and-locked. He then set up for a straight-in, and as we crossed the threshold, I saw the fire trucks and ambulance, which followed us to a stop. We taxied off the runway and shut down on the taxiway, then hopped out and thanked each other for a job well done. Looking at the aircraft, it seemed that just one bird had caused the damage.

We talked about the things we could have done better. I was flying a simulated instrument approach. We were responsible for our own VFR clearances. I should have kept scanning outside, grade or no grade. We initially wanted to just land the aircraft. We realized we first needed to take care of the emergency. That's when my instructor called for a climb to altitude. There was the distraction of multiple calls over the radio. Between the other aircraft asking for our working area, offering their assistance, and center's responses, comms were extremely difficult.

We did some things well. Neither of us lost his head. We calmly divided the emergency tasks, and once we realized we needed to do the checklist items, we went through them quickly and calmly. Although we were nearing the end of a long day of simulated and actual instrument work, I learned to always keep in mind the responsibility we all bear: to see and avoid. 

Ltjg. Gaines flies with HC-11.



A Close

By Lt. Chris Hayle

It was a very dark night at the end of our fifth month of cruise and our fourth continuous month in the Arabian Gulf. We were manning up for what would be the XO's final night event of the deployment (sorry, no commander's moon tonight). At this point in the cruise, the flight-deck crew was tired, as were the aircrew. We knew every man-up had the potential for a mishap. The squadron's safety department and everyone in the chain of command had briefed us on the potential for disaster.

We started up and had both engines online. As the copilot, I ran through the pre-taxi checks, and all we needed was a yellow shirt to direct us to the catapult. We were parked in the junkyard, aft of the island, facing the spaghetti of the arresting gear cables. Our taxi to the cat was delayed because the green-shirts were reattaching the arresting gear cross-deck-pendant to the 3-wire. They were also completing their checks by pulling the wire out and back with a tractor. As a result of the 3-wire's movement, our maintenance crew was placed in the awkward situation of having the safety chain guarding the propeller arcs compromised.

Photos by PH3 Danny Ewing and
PH3 J. Scott Campbell
Photo composite by Matthew J. Thomas

Encounter of the Worst Kind

Our plane captain, his PC trainee, and the flight deck coordinator cleared the area in front of the aircraft. They were positioned to the port side of the nose at our ten o'clock, in order to remain clear of the 3-wire's bight on the retract. Our QA rep was positioned to the starboard side of the nose, and the AME positioned further to his right, about five feet away from the turning propeller. This left a gap in the safety chain directly in front of the Hawkeye's nose.

It was a blueshirt who had run out of the landing area...She was running straight for the starboard prop!

After the 3-wire had been pulled out three times, a yellowshirt approached the aircraft and gave the signal to break us down. We ran through the final items of the pre-taxi checks and waited for the chocks and tiedown chains to be removed.


I looked in the side-view mirror and checked the progress of the chains being removed from the starboard mainmount. I saw a quick movement beneath my window outside the aircraft. It was a blueshirt who had run out of the landing area and slipped through the gap in the safety chain in front of the nose. She was running straight for the starboard prop! The QA rep, who moved in to remove the starboard nose tiedown chain, spun around and tried to grab her, but she was moving too fast. I immediately started to reach up and pull the right emergency shutdown handle. Before I could pull the T-handle, a quick-thinking AME risked his own life and darted in towards the propeller to intercept her. He grabbed the blueshirt, pulling her away from certain death. She was no more than two or three feet from the

spinning prop when he reached her. She was moved away from the aircraft and sent below deck, still not realizing how close she had come to a gruesome death.

In the E-2 community, all maintenance crews and aircrew have propeller-arc safety drilled into them. We never violate a prop arc unless preflighting the aircraft or performing maintenance on the prop.

In the CV environment, young Sailors attached to ship's company and jet squadrons are not accustomed to prop arcs. During a dark night on the flight deck, it's just about impossible to see a turning prop. With the jet noise on the flight deck, hearing the Hum-

mer's distinctive drone from our T56 turboprops isn't easy. This incident illustrates the critical importance of the E-2C prop safety chain. Even if I had pulled the T-handle and shut down the engine as soon as I saw the blueshirt, the prop would have still been spinning fast enough to kill her.

The blueshirt was just trying to get the aircraft broken down expeditiously, but she almost paid for her lack of situational awareness with her life. Not long ago one of our sister squadrons had a similar prop arc mishap where a blueshirt was killed. Everyone on the flight deck needs to be fully aware of what is happening around him or her. If you see people waving blue wands near the nose of a Hawkeye or Greyhound at night, give that area a wide berth. And the next time you're on the flight deck or the hangar bay and you see someone walking through a prop arc (or a helo tail-rotor arc) during FOD walkdown, give them a friendly reminder. 

Lt. Hayle flies with VAW-126.



A Close

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It was a very dark night at the end of our fifth month of cruise and our fourth continuous month in the Arabian Gulf. We were manning up for what would be the XO's final night event of the deployment (sorry, no commander's moon tonight). At this point in the cruise, the flight-deck crew was tired, as were the aircrew. We knew every man-up had the potential for a mishap. The squadron's safety department and everyone in the chain of command had briefed us on the potential for disaster.

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I looked in the side-view mirror and checked the progress of the chains being removed from the starboard mainmount. I saw a quick movement beneath my window outside the aircraft. It was a blueshirt who had run out of the landing area and slipped through the gap in the safety chain in front of the nose. She was running straight for the starboard prop! The QA rep, who moved in to remove the starboard nose tiedown chain, spun around and tried to grab her, but she was moving too fast. I immediately started to reach up and pull the right emergency shutdown handle. Before I could pull the T-handle, a quick-thinking AME risked his own life and darted in towards the propeller to intercept her. He grabbed the blueshirt, pulling her away from certain death. She was no more than two or three feet from the


spinning prop when he reached her. She was moved away from the aircraft and sent below deck, still not realizing how close she had come to a gruesome death.

In the E-2 community, all maintenance crews and aircrew have propeller-arc safety drilled into them. We never violate a prop arc unless preflighting the aircraft or performing maintenance on the prop. In the CV environment, young Sailors attached to

ship's company and jet squadrons are not accustomed to prop arcs.

During a dark night on the flight deck, it's just about impossible to see a turning prop. With the jet noise on the flight deck, hearing the Hum-

mer's distinctive drone from our T56 turboprops isn't easy. This incident illustrates the critical importance of the E-2C prop safety chain. Even if I had pulled the T-handle and shut down the engine as soon as I saw the blueshirt, the prop would have still been spinning fast enough to kill her.

The blueshirt was just trying to get the aircraft broken down expeditiously, but she almost paid for her lack of situational awareness with her life. Not long ago one of our sister squadrons had a similar prop arc mishap where a blueshirt was killed. Everyone on the flight deck needs to be fully aware of what is happening around him or her. If you see people waving blue wands near the nose of a Hawkeye or Greyhound at night, give that area a wide berth. And the next time you're on the flight deck or the hangar bay and you see someone walking through a prop arc (or a helo tail-rotor arc) during FOD walkdown, give them a friendly reminder. 

Lt. Hayle flies with VAW-126.

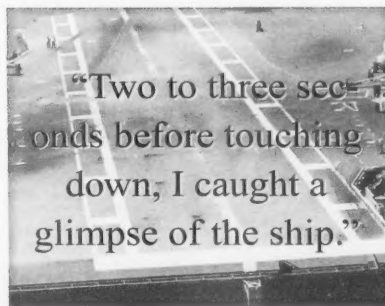
Using the Noggin

By LCdr. Joel Jungemann

"This manual contains information on all aircraft systems, performance data, and operating procedures required for safe and effective operations. However, it is not a substitute for sound judgment."

The preface to all aircraft NATOPS manuals contains this statement. I've often wondered when and how you decide to disregard or modify NATOPS procedures. We found out one day in the Sea of Thailand.

In the third week of deployment, we were conducting a PASEX with the carrier



After proceeding to our station at max conserve and making one run on the ship, we headed to marshal. Holding at the top of the stack at 18,000 feet, we were in and out of the clouds and rain. The defog came on four

minutes before our push time, and following the standard delta four, we commenced the CV-1 approach.

We immediately entered torrential rain, which I hoped was just an isolated shower. At 1,200 feet, the defog came off, and we dirtied up at eight miles, still in the rain. ECMO 1 and I discussed how we would use the windshield air. I told him that if we were still in the rain at three-quarters of a mile, to start toggling it on and off so we could get a good look at the boat. Our NATOPS has the following caution regarding the rain-removal system:

"Prolonged use of the windshield air may result in cracking the pilot's windshield. Windshield air should be used in short durations..."

The following sentence is also found in the extreme-weather-procedures section:

"Windshield rain removal has been found to be marginal when flying through moderate to heavy precipitation."

We flew the ACLS to three-quarters of a mile. Our clara call turned the pass into an LSO talk-down, and ECMO 1 began toggling the air switch. With the ship not in sight at 200 feet, I considered taking my own waveoff, but the LSO



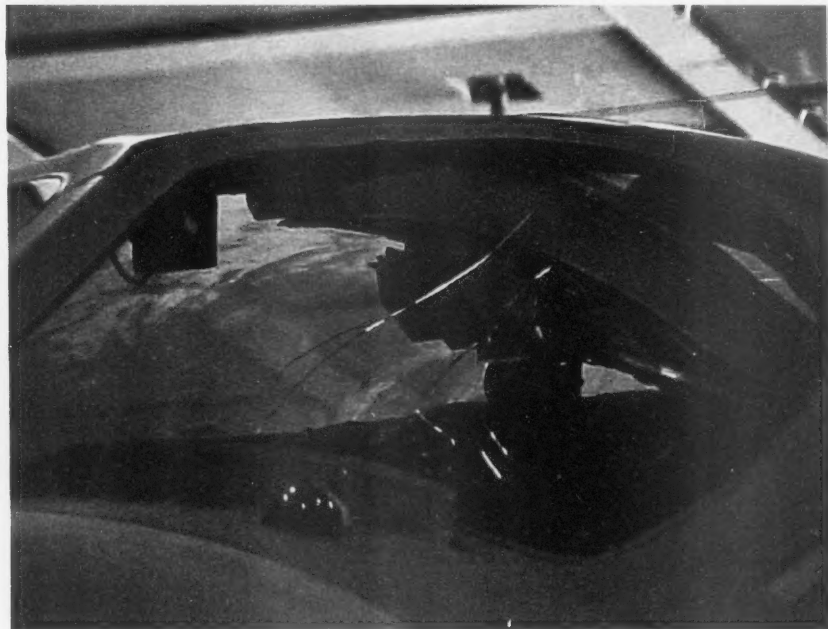
we were relieving. Our Prowler crew was tasked with playing orange air for our 1+30 cycle, and I was also giving my rightseater his annual NATOPS check. The forecast called for low ceilings and heavy showers, and for once, the weather-guessers were correct. The long time it took to find clear air on the daytime Case III departure should have indicated what was to come.

calls were correlating with the needles, so we kept it coming.

My last-second line-up correction, with a healthy shot of power, sent us over the wires and off to the races with the happy lights flashing at us as we went by.

After releasing my seat cushion, we climbed and turned downwind for another try. I told ECMO 1 to toggle the air on and off from

windscreen. After lowering my seat and visor, we sighted and then lost sight of the tanker three or four times. A hundred knots of closure and an idle-boards-cross-control rendezvous later, we got our gas while telling our CATCC rep of our problem. I tried to inject a little levity by asking the skipper for a waiver to couple-up. He and CAG didn't seem amused by my request. So much for levity.




On downwind for attempt number three, we got the good news from CAG paddles that the weather had improved slightly. "I'm sure this spider web for a windscreen will more than nullify any slight improvement in the weather," I thought. Since we already had verified the marginal performance of the windshield air and confirmed the windscreen might crack, we decided to stand on the air again if we

three-quarters of a mile to 200 feet, and then, if the boat was not in sight, to stand on the switch until we touched down.

With the ACLS controllers unable to get a lock-on, the bull's-eye approach resulted in another talk-down. When we still were clara at 200 feet, ECMO 1 started the steady stream of air. Unfortunately, this only spreads out the water on the windscreen. We sighted the ship earlier this time, but the deck-cycling, coupled with some excellent ham-fisting by yours truly, sent us over the spaghetti yet again.

Since we were blue-water ops, the signal was to tank. Departure called the tanker on our nose at four miles. I raised the gear as my rightseater hit the air again, trying to gain sight of the tanker through the rain and clouds. As I prepared to raise the flaps and slats at 185 knots, I told him to kill the air because I was looking at two cracks in the bottom of my windscreen. As we accelerated to 250 knots, I watched in disbelief as both cracks marched their way to the top of my

needed it. Another bull's-eye approach led to another talk-down. We needed constant air from about 200 feet in, and some good calls by paddles and some marginal deck spotting by me got us into the ace. The windscreen remained intact throughout the touchdown and trap.

In our situation, substituting sound judgment for NATOPS procedures was a no-brainer. The weather had deteriorated to the point that not much else was going to work. Although we went against the NATOPS recommendation of using the windshield air "in short durations," and the windscreen cracked, I'm convinced we never would have seen of the ship, let alone gotten aboard, without constant use of the air. Knowing NATOPS procedures cold is always your first line of defense, but sometimes compound emergencies, situations not covered in NATOPS, or certain kinds of weather require—to quote Grandpaw Pettibone—"the use of your noggin," in addition to what's written in the book. 

LCdr. Jungemann flies with VAQ-135.

Wind the Clock Before an Emergency



By Lt. Jamie Lynch and Lt. Mike O'Hara

The flight.

We had a normal startup and Case 1 takeoff. Then, 45 minutes into flight, after we completed the mission, we observed high oil pressure on No. 1 engine at military power. The crew retarded the throttle to idle and monitored engine instruments. The aircrew requested a straight-in approach using only the No. 2 engine, leaving the No. 1 engine at idle. As the aircrew prepared for approach (checklists, navigation, adjusting gross weight, etc.), the No. 1 oil pressure increased while the No. 1 engine was at idle. The aircrew secured the No. 1 engine, following NATOPS, and flew a straight-in approach to landing.

The recap.

As we debriefed this flight, I remembered my crusty simulator instructors at the training command. They had preached about winding the clock before executing emergency procedures. They were right! Few emergencies in the S-3B, or in any aircraft, require a mad dash through the procedures. You must calmly and methodically set priorities and apply NATOPS. Certain catastrophic situations may accelerate the necessary responses, but aviating, navigating and com-

municating remain the bread and butter for any aviator. How an aircrew determines its priorities and responds to emergency situations is affected greatly by crew resource management (CRM).

CRM is necessary during all flights, but some flights prove to be exceptional CRM opportunities, usually when something goes wrong. The flight described above is an excellent example. It had promised to be an exciting flight: a 1+15 cycle for some bombing, SSC and mission tanking. It was a beautifully clear (and rare) Arabian Gulf morning.

The aircraft operated normally until we returned overhead for recovery. We had a problem when we accelerated to rendezvous with our playmate for a package check. With the throttles at military, the No. 1 engine oil pressure indicated 97 to 98 psi (out of NATOPS limits). When the pilot reduced the throttle to idle, we observed the oil pressure was within limits.

Since the oil pressure was out of limits at military, but within limits at idle, we decided to find out the exact engine speed at which the oil pressure went out of limits. An intermediate power setting kept us below the maximum NATOPS-oil-pressure limit and gave us enough airspeed to complete our recovery-tank duties. We briefly entertained the idea of tanking but

decided to concentrate on the situation at hand. The pilot had earlier experienced an emergency in the work-up cycle requiring him to secure the No. 2 engine in flight and to recover aboard the CV. With one single-engine experience at the boat under his belt, I felt confident our crew could handle recovering with only one engine. There was no need to panic. I knew what to expect and the pace at which to handle the situation, but I had done it only once. Would the CRM skills in this crew be as good as those in my last crew?

We talked about the pros and cons of using the No. 1 engine for the recovery. Should we leave it at idle and use only the No. 2 engine for the approach and (if necessary) waveoff? Should we use both engines? No. 1 was within limits at all Ng except military. We opted for the former, and called the tower to tell the boss we would need a straight-in approach. We would use only the No. 2 engine and leave No. 1 at idle. As we prepared for the approach and completed the checklists, we noticed the No. 1 engine's oil pressure creeping up beyond limits, so we secured it.

"Here we go again," I thought. My concern besides flying the plane was how we would perform as a crew. I was looking for any sign that CRM might be falling apart. We carefully performed the checklist items. As before, the emergency portion of the flight was like being back in the flight simulator. Based on my experience, I evaluated the sequence of events and the overall level of CRM.

After completing the checklist, we told the boss of our new situation. The fact that we were a single-engine aircraft got his attention. We flew a straight-in approach and made an arrested landing.

Throughout the crew debrief, we recalled the many questions that had run through our heads. We rehashed the decision-making process, our decisions, and other people's reactions to our decisions. Aircrew coordination was alive and well in our cockpit, and we noted several issues that met the CRM criteria.

Decision making and assertiveness: While we were overhead, we thought about several things. Can we continue our recovery tanking?

Leave No. 1 at idle or use it for the approach? Do we shut down the No. 1 engine?


Mission analysis: There was a false sense of security before we secured the No. 1 engine. As we wasted time overhead and considered tanking, we were denying ourselves valuable time for handling our emergency and setting up for a straight-in. We vetoed the tanking option, saying on ICS, "We are an emergency aircraft, not a tanker; we need to go to the bullpen."

Communication: Relaying the emergency to all three members of the crew was our first priority. Then we called our rep in the tower to tell him our situation. Before we talked to him, we made sure we had considered all contingencies. The more time the crew has to consider the

There was no need to panic. I knew what to expect...

situation, to review all the effects, and to communicate this to the rep, the better the rep can help coordinate with the boss, flight deck, and maintenance personnel.

Leadership and situational awareness: As with most emergencies, the person with the most situational awareness provides the best leadership. In some cases, it's the pilot, but it can be the TACCO in the backseat, who might have a better sense of the big picture. Our pilot, although junior, was able to draw from a similar emergency months earlier. This helped him prepare for this approach. Also, we read a MAF in the maintenance book for a changed No. 1 engine-oil sump. High oil pressure is not uncommon after that procedure.

Adaptability and flexibility: With the information provided from our cockpit and recommendations from the rep, the boss can make better, more timely decisions about how to handle our aircraft and the rest of the aircraft on that cycle. 

Lt. Lynch and Lt. O'Hara fly with VS-22.

That's Not
a Boat,

That's an



H-46

Photo illustration by Yvonne Dawson

By Ltjg. Ryan Phillips


We were flying a night SAR for an LHD off the West Coast. It was the fifth hour of the exercise, and we were in low-light conditions. We wanted to get our unaided qualifications, so we didn't use night-vision goggles. The Marine helicopter crews, who were using goggles, were completing their flights and heading home.

The water, 300 feet below, was unseasonably glassy, which made it hard to separate aircraft from watercraft. To make matters worse, the navigation lights from the boats reflected off the water, creating two of every light on board.

I was at the controls, and our aircraft was dead silent, except for the occasional clearing calls to the right. Monotony and exhaustion were affecting us all. As the Marines returned and pushed to their primary frequency, our crew listened and tried to pinpoint their location, since we were flying between the LZ and the boat. We heard a Marine H-46 report five miles off the starboard quarter. We were two miles on the outbound leg from the starboard bow. The inbound aircraft was expected to conform to the delta pattern, which would have given us a clearance of about six miles. We assumed that, with our anti-collision lights on, they could see us from 30 miles away and have plenty of time to avoid us. We maintained our thousand-yard stares into darkness.

I began to focus on a dim red light. I figured it had to be a couple of miles away, so I began to cross-check it with other images I had seen all night. I thought, "Is this another boat on the water, or could it be an aircraft?" I looked for the telltale sign of the boat's navigation lights reflecting off the water, but I never saw it. I called out the traffic to other crew members, so they could help identify the light. It remained motionless, and the crew was having difficulty spotting it.

Before anyone else found the dim light, I began to notice our dark surroundings becoming a shade darker directly in front of us. Then, in a hair-raising split second, my instincts reacted with an armpit full of collective and a left knee full of cyclic. We pulled up and to the left just as a Marine H-46 silhouette nosed down and to the right of us.

We were so close we could identify the aircraft on a black-on-black night. I was angered at having been surprised. I don't ever want to recreate the split second of terror that overwhelmed me. It would never have happened had we not taken some things for granted and lost our situational awareness. 

Ltjg. Phillips flies with HC-11.

By LCdr. Randy Stearns

We were on the second leg of our transit to NAS Roosevelt Roads for an orange air detachment after stopping at NAS Key West for gas. Weather and winds looked good for our 1,045-mile trip to Puerto Rico over open ocean. A few suitable divers existed along the way in case of any aircraft malfunction. We had to climb to a minimum-cruise altitude of 33,000 feet, which would leave us with an on-deck minimum of 2,000 pounds of gas. The Grand Turks was the only suitable

assumed there were approximately 7 liters of LOX, but, even if the amount actually were 6 liters, it still would be enough to make the 2.3-hour flight to Roosevelt Roads. According to F-14 NATOPS, 5 liters of LOX with a cabin altitude of 15,000 feet will provide 5.3 hours of oxygen for both aircrew. Our cruise altitude was 33,000 feet, but our cabin pressure was reading 14,000 feet, which was 2,000 feet above what we normally would see at this altitude. The LOX light came on hard 20 minutes after it started

flickering.

The LOX gage was reading between 4 and 5 liters, but our concern was that we really didn't know how much LOX we had. The pilot and I agreed to have me go mask off for 10 minutes, and



Sucking Rubber...Not!

divert en route Puerto Rico, so after passing it, we were committed to Roosevelt.

Takeoff, climb and cruise were all normal. We were letting a newly-crowned section leader take the No. 3 plane all the way to Puerto Rico. Our ETE was 2+45, which would put us on deck with 2,500 pounds. No problem, the winds were favorable, and our calculations were right on... well, except for one crucial item in our jet. About one hour into the flight, my LOX light in the back started slowly flickering for about 15 to 20 minutes. I asked the pilot what the LOX gage read, and he said 6 liters. We agreed this would be more than enough to reach our destination.

On man-up at Key West, the LOX-quantity gage fluctuated between 6 and 8 liters. We

mask on for 5 minutes, to conserve LOX. The pilot would stay on the entire time. We were experienced aviators with more than 2,000 Tomcat hours each and felt it would be no big deal to stay mask off at this cabin pressure. Wrong! With 1+00 of flight time remaining, the LOX ran out. We were 150 miles past our last divert and committed to Roosevelt Roads. We felt confident we could make it without descending.

After 15 minutes off the LOX, I told the pilot I was not feeling right. I had felt the first signs of hypoxia setting in. I told him we needed to descend, and the pilot notified the flight lead we were descending. Thirty seconds later, I told him I was "in trouble" and needed to get down (with a lot more inflection in my voice than I can write

here). At this point, sheer panic set in, as I was about 30 seconds from passing out. The reality that there was nothing I could do to stop the hypoxia from setting in was making me feel like I was trapped in my own private tomb. I was not thinking clearly and our wingman said I appeared to be "out of it" from what he could see in our cockpit. The one thing I remember is the pilot telling me to pull the green apple. It seemed like it took an eternity to find it and to get that nice flow of oxygen into my lungs.

Within a span of four to five minutes, my pilot felt the same overwhelming feeling of hypoxia. I thought, "Oh my God, I can't believe this is happening." The onset of hypoxia was rapid and violent, much more so than what I remember during my last pressure-chamber ride at flight physiology. It always was fun to see your buds get hypoxic, because you always knew someone would help you out if the training event went awry. Well, I'm here to tell you that no amount of training prepares you for the reality of what we were experiencing.

We knew from our training that we were getting hypoxic. The only thing to hope for was our emergency oxygen supply would hold out long enough for us to get to a lower altitude. We finally got to 25,000 feet, which gave us a 9,000-foot cabin pressure. We were now feeling better about ourselves, and I quickly rechecked our gas. It still showed us arriving within the SOP for on-deck fuel (2,000 pounds). After five minutes, my emergency oxygen ran out. My body still was shaking from the initial hypoxia, but I felt the worst was over. I took off my mask, and, after five minutes, was feeling hypoxic again. The 9,000-foot cabin pressure was not enough to get my oxygen level back to normal levels. I told my pilot, whose emergency oxygen lasted 15 to 20 minutes, that I needed to go lower. He descended to 19,000 feet, which gave us 7,000-foot cabin pressure. I slowly started to feel better, but now we had another problem: Fuel at this flight level was going to be an issue.

We told the most fuel-critical of our three jets to stay high and continue on to Roosey. We kept the other wingman with us in case we had any more problems or had to eject over the ocean. At least he could pass a position report for us to the Coast Guard to come and get us in the Atlantic. We throttled back and hoped the usual afternoon tropical thunderstorm wouldn't be sitting over

the airfield. We would be on deck with fewer than 2,000 pounds of gas, and any delay would put us in the hurt locker. The next 30 minutes of transit seemed to last forever. My pilot and I felt as though we had been used as punching bags because our bodies were so drained after the hypoxic events. We just wanted to get on deck and taste fresh air. We landed without incident, but the lessons learned are numerous.


We never considered running out of LOX. With limited divers available over open ocean, a descent would have made it difficult to get to our destination. If this had happened 600 miles from our destination, we would have returned to NAS Key West or diverted into a foreign airfield. What if weather had clobbered the field for 10 minutes?

The pilot and I both had "I can hack it" mentalities. We were experienced and had flown mask-off at this cabin pressure before. The post-flight inspection found not only was our LOX indicator reading incorrectly, but a nut to keep the cabin pressure steady had backed off its normal position. This explained the rapid onset of hypoxia: The actual cabin pressure was higher than the scheduled cabin pressure.

We should have declared an emergency but didn't, which caused more stress. Having two crew members onboard saved us. Whether we admit it or not, we were not thinking clearly, but between the two of us, enough info was passed to keep our heads in the game long enough to make it to a lower altitude.

We now pay closer attention to preflighting our emergency oxygen supply in our seat pans. Without a doubt, it is what kept this incident from becoming a Class A mishap.

When the normal supply of LOX is depleted and the emergency oxygen in the seat pan is activated, you must turn the normal LOX on-off switch to the off position. If the LOX switch is left on with the seat pan activated, the emergency oxygen supply will bleed off and deplete the emergency supply at a much faster rate. This may account for why the RIO's emergency-oxygen supply lasted only five minutes while the pilot's lasted 20 minutes.

The chain of events could have been broken one hour after takeoff if we had returned to our point of departure and checked our LOX bottle. 

LCdr. Stearns flies with VF-103.

SOP Says No Compound Un

By Lt. Russ Raines

Our cruiser had conducted contingency operations near Taiwan for several weeks. A previously tense operating environment had become routine, reminiscent of Arabian Gulf flight ops. You remember those: sweating during the preflight, launching, and then droning around for a four-hour mission. This night, however, certainly broke the monotony.

We took off into a moonless night. Our mighty SH-60B began to climb as the HAC called, "Ops normal, gear up." He was an H-2 transition guy. The cloud deck was at 500 feet, and we decided to stay below it. With the carrier aircraft tucked away for the night, we were lords of the sky—defenders of freedom and the carrier battle group.

We ate our box lunches and started our evening search for BBC World News on the HF radio. Save for the moonless night, low ceiling, and contingency operations, the mission seemed routine and uneventful.

Surprisingly, the controller called on link and said we needed to quickly close the ship—they had an active sonar contact. Sitting as the airborne tactical officer on the left side and being the H2P, I had visions of FRS simulators flashing through my head: buoy patterns, ranges, demanding instructors. Then I returned to reality: We were spooling up for real ASW. Scanning the instruments, I noticed we were zooming inbound at a blistering 65 knots. After my best "Well?" facial expression (I was not communicative at night), the HAC ranted, "It's gonna be a pinnacle, or a wreck...how often does a cruiser pinging on its sonar actually gain contact?"

The sonobuoys went in the water; we waited and actually gained contact. What does every former H-2 driver say after sniffing a sub? "Stream the MAD." With 150 feet of cable and shape flying form behind the aircraft, we trolled

Related Emergencies

for a sub. We consistently gained MAD hits on the target, and we were able to stay with him. All too soon, we had to RTB for fuel. We were feeling good, pumped up from maintaining contact, and eager to get back in the game.

Returning to homeplate, we heard many people on the link, playing ASW warrior. A P-3 had checked in on the ship's land-launch frequency. The three of us constantly tried to coordinate with folks on three different radios. There definitely was too much chatter. We decided to keep everyone, except the LSO, off the radios, so we could concentrate on the approach and landing. Despite our efforts, the ASW problem followed us to the deck, with the P-3 TACCO clobbering our recovery frequency, giving hot and cold reports to our ship. The ship tried to explain there was a helo trying to recover so everyone should be quiet. We kept saying, "Please stand-by," but these calls went unheeded, so we basically made an EMCON recovery.

We refueled, reloaded sonobuoys, and launched back into the charcoal sky. Shifting back into ASW mode, we streamed the MAD and tried to regain submarine contact.

Almost immediately, things began to unravel. Eager to regain contact, we were surprised to see our first systems problem of the evening, a cable limit light. The MAD had not deployed properly. We cursed the system and decided to reel the cable back in. It didn't want to. Adhering to NATOPS limits about overheating the reeling machine, we postponed this action for 15 minutes. "No sweat," the HAC said. "It happened in the H-2 all the time." As this went on, I noticed how we were slowing, then going faster, and the pilot didn't hold the headings I gave him. He wasn't keeping the wings level, either. I meekly put it down to vertigo and asked if he was all right. He said, "Yes," as he continued to correct the deviations.

I definitely didn't have a warm-and-fuzzy, but it was night, and a lot was going on. The HAC kept asking if it was time to again reel in the MAD. The crewman patiently replied, "It has

In the blink of an eye, we were 15 degrees nose down and accelerating—this from only 400 feet.

Photo composite by Matthew J. Thomas

only been two minutes since you last asked, sir.” We discussed jettisoning the MAD with the emergency release when the HAC made a great call. He had us stop the ASW problem and take a step back to assess our situation.

As any LAMPS crew could imagine, the ship would not hear of it. We respectfully ignored their prodding and switched the ASW system over to ship control.

The HAC decided to pass the controls to me so he could help troubleshoot the MAD. Of course, up to now, I hadn’t touched the controls for hours. I quickly shuffled the charts, moved my eyes from the tactical display to the instruments, and announced, “I have the controls.” In the blink of an eye, we were 15 degrees nose down and accelerating—this from only 400 feet. I yanked back on the cyclic and pulled an armload of collective. The helo responded for all it was worth and climbed rapidly. I overcorrected on the recovery—sweating, swearing, and hoping the MAD hadn’t hit the water. I was reminded of the T-34 simulator in flight school; it just wouldn’t stay straight and level. I got it under control as best I could and felt something was missing from the automatic-flight-control system

(AFCS); namely, everything. Actually, the trim and stabilization were gone, along with the aircraft’s ability to keep itself out of the water.


I had it reasonably under control, and the HAC was troubleshooting the AFCS. I was surprised he hadn’t taken the controls from me. He said he had noticed the aircraft just wouldn’t stay trimmed or stable but hadn’t mentioned it because he was preoccupied with the MAD. I guess he was just concentrating so hard on scan and airwork that he wasn’t aware trim had left the picture.

I was not warned up to catch such a departure. ORM time. We were puttering around in night IMC, with a streamed and stuck MAD, no stabilization, and our ship was prodding us to get back in the ASW problem. “Stand by” became our watchword. We tried to explain what was going on, but it just wasn’t getting through to the ship that we really had a multi-system compound emergency, at night, with a 500-foot ceiling.

We tried to reel in the MAD again. Our aircrewman hung out the cabin door and tried in vain to see if the cable was still attached. The beam of his flashlight wouldn’t reach far enough. He sat down and tried again to reel it in. This time the reeling machine worked, and he looked back out the door.

Despite the windblast, we clearly heard an even louder blast of expletives from him. After the HAC came back down into his seat, the crewman explained that yes, the MAD was visible, but it was lodged sideways. No real danger, just no supersonic flight.

We followed our survival instinct and realized this just wasn’t our night. Now all we had to do was shoot an AFCS-off, IMC approach to the back of the ship and land. Meanwhile, the HAC had discovered his trim-release button on the cyclic had stuck in the down position and wouldn’t budge. This fifty-cent button was negating our multi-million-dollar stabilization system. The subsequent approach and landing were ugly to be sure, but we got aboard.

Situational awareness and an acute sense of when to back off led to sound decision-making. That sort of judgement allowed our crew, the aircraft, and all its parts to make it safely back on deck. We shut down and politely declined the ship’s request to re-launch. 

Lt. Raines is an FRS instructor with HSL-41. He was with HSL-51 at the time of the incident.

Bad Hook-Up

By LCdr. Brian Boring


The title implies a blind date gone bad, but it's really the story behind my first cat shot on *Indy*. I was a brand new CAG LSO. I already had been introduced to *Iwo Jima* FCLPs, and this was my first at-sea period on the last of the small-deck carriers.

The brief was great fun, since all three of the bubbas I was flying with were recent RAG students of mine. I walked early as usual (I hate to be late for anything, much less a bag ex). We cranked up the airframe and taxied to cat 4. We got hooked up and would be first off the flight deck, looking for a depart and re-enter.

As my eyes traveled outside, I realized we were accelerating, but there was no associated kick. The only thing I knew for sure in that split second was I wasn't going flying today. My first instinct was to try and get the tow bar out of the shuttle before we were dragged into the drink. I selected nosewheel steering and jammed on the right brake. To my relief, the nose started to slide right, which provided the added benefit of getting me away from the port-deck edge. The next problem was to stop the aircraft. It wasn't whipping along, but it had built up some decent speed before I could get the engines back to idle. I got it stopped halfway down the cat track, cocked 45 degrees to the right, with two flattened-off tires. The holdback had not been seated fully and had slipped out when full power was applied.



Things were fine as I was signaled into tension and went heads-down to monitor instruments as my motors came to military power. My words follow my eyes during the run-up so my crew keeps abreast of what I am seeing. I normally say, "Strut-lock light is out, rpm, EGT, fuel flow, oil pressure, hydraulic pressure all in the green, IPI is stable, here we go Mary Joe." I got to hydraulic pressure and noticed the cat officer running backward.

As a RAG instructor and LSO, I have given so many cold-cat scenarios in the trainer that it's impossible to remember them all. About all you ask of the student is to recognize the situation and pull the handle. The question most asked of me then was, "Why didn't you just pull the handle?" I can't answer that question. I can tell you that, with a 1.2-second seat, I should have. 

LCdr. Boring flies with VAQ-132. He was the CVW-5 staff LSO during this incident.

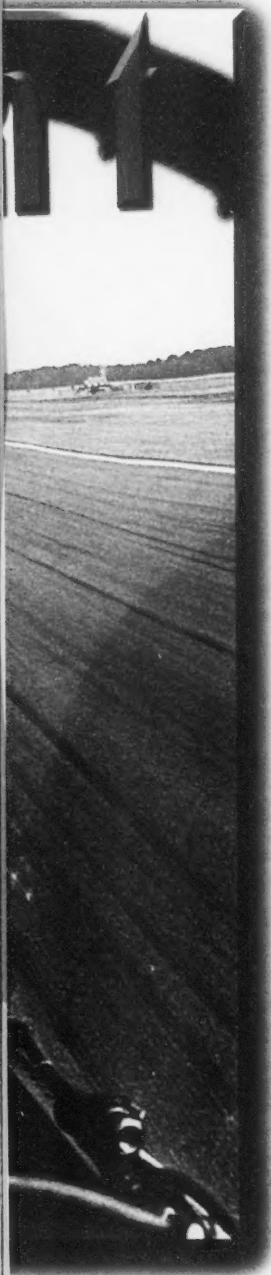


By Lt. Matt Pothier

I was in the backseat for a student's first Nav hop in the syllabus, known also as a low-level. As a new instructor at the Fleet Replacement Squadron, I was fired up by the student's performance on the low-level navigation portion. It was a good flight, with just a few minor administrative errors. We popped off the route near the Loom Lobby target

range and slid back toward Miramar for the break on a beautiful, VFR, Southern California day.

The flight went well until I heard tower talk to an S-3 on a two-mile final, clearing him to land on runway 24 right. At the same time, my student was dirtying up the aircraft and going through the landing checklist. He reported abeam, and tower



cleared him to land on runway 24 left. He rogered the call without repeating the runway. I asked him if he had the S-3 in sight. "I've got him, sir," he said, as he began his approach turn. I asked him which runway he was cleared to land on, and he said, "The right," as was evident by the current angle of bank of the Hornet.

Well, that wasn't good. I had him confirm with tower which runway he was cleared to land on. He also admitted he did not see the S-3 we soon would rendezvous with. The near-catastrophe averted, he increased his angle of bank and planted the FA-18 on the approach end of runway 24 left.

We now were safe on deck, or were we? I had the S-3 in sight the whole time and would have been able to take the controls if my student had continued the approach on the wrong runway. That's the beauty of the two-stick trainers; you always can override a bad situation if your students don't recognize their errors in time. As instructors, we just have to set our own limits and realize when we have to step in.

Always remember, it's not over until you are back in the chocks. We were still doing 130 knots down the middle of runway 24 left.

I noticed something peculiar on the runway, and our nose was rapidly tracking toward it. We did not have time to add power to try to go over it, so both of us gave a little boot of right rudder to go around it. We passed the object, still doing 130 knots; it sneaked just underneath our left wing tip. It was a big, metal, swivel chair.

"Did you see that?" the student piped up, as the chair whizzed by.

All I could mutter while trying to avoid it was "Yup."

Neither of us had overreacted. We both applied a bit of right rudder. Yes, it was a very close left-to-left, but I am glad we didn't end up careening off the airstrip by overcorrecting and stomping on the rudder pedals. We straightened ourselves out down the runway and came to a stop.


"You just cleared us to land on a FODed runway. There's a metal chair on the centerline of runway 24 left, just past the approach-end-arresting gear," I growled over the radio to tower.

I could tell that tower was a little surprised, and 20 seconds later they let me know the airfield manager would speak to me in the squadron spaces.



"You just cleared us to land on a FODed runway."

It turns out there were two chairs on the runway. The second chair was off to the left, and I hadn't seen that one. Both chairs were positioned so tower could see only their side profiles. Even I couldn't spot them again until I got much closer to the approach end after taxiing back toward our line.

The chairs were our LSO-platform chairs. Only five minutes before my landing, they had been blown onto the runway by a C-2 doing engine run-up checks on the off-duty (runway 28), with their tailpipes pointed directly at the LSO platform. These were big, old, metal chairs. Who would have thought they could be blown out on the runway so easily? We promptly cut the wheels off the bottoms of those hulking pieces of steel. No more inadvertent wheelchair races when the LSOs are out waving at Miramar. 

Lt. Pothier flies with VMFAT-101.

Last in the

By Lt. Phil Ventura

It was a great day in naval aviation. I was scheduled for two flights; my annual frontseat NATOPS check in the afternoon and a backseat, high-value-asset flight in the evening. It was a welcome change from the past few days of carrier qualifications off the Virginia coast in preparation for COMPTUEX.

Earlier that morning, the maintenance department had worked to get aircraft 500 ready for flight. The AEs changed out a faulty external power unit, the ATs checked antennas, and the airframers checked control lines. All worked with great intensity and focus to get aircraft 500 ready for the day's seventh sortie.

I returned from the NATOPS flight and jumped into my next crew brief for the second flight. We listened intently as ECMO 1 gave the administrative CV procedures and operations brief, including preflight responsibilities. The pilot and ECMO 1 would preflight the bottom of the aircraft; ECMO 2 and ECMO 3 would preflight the jamming pods and the top. We reviewed our crew responsibilities for the mission and for possible emergencies. During emergencies, ECMO 2 would monitor the pilot's airmanship by referencing the airspeed, altitude and attitude instruments in the back seat; ECMO 3 would follow ECMO 1 with the pocket checklist and make sure procedures were followed and all possibilities considered.

Our crew was on the flight deck 45 minutes before launch time to preflight aircraft 500. It was a beautiful evening. The seas were calm, skies clear, and the sun was on the horizon, setting the entire sky aflame with a bright-orange hue. The pilot and ECMO 1 began their walk-around, while ECMO 2 and I climbed onto the aircraft to inspect the top. By habit, preference and physical dimensions, I usually take the ECMO 3 seat. This position makes me responsible for preflighting the upper left fuselage. I went through my usual routine and inspected the lights, antennas, panels, inlets, flaps, slats, speed brakes, and ram-air turbine. I took one last look at the waning sunset, strapped into the jet, and prepared for our night launch. Throughout my scan of the upper fuselage, I failed to notice the panel screws from the morning's work were not set and tightened.

We completed our before-takeoff checks and waited for the directors to taxi us into position on the catapult. As we taxied around the flight deck, our plane was in full view of the plane captain, ground crew, and deck handlers, but all failed to notice the loose panel screws. We taxied to the cat 1 shuttle and were given one more cursory inspection before being put into tension. The pilot wiped out his flight controls, throttled the engines to military thrust, and quickly checked the instruments. We were ready to go. The pilot turned on the anti-collision lights, and we hurtled into the coming darkness. Fifty-six-thousand pounds launched from zero to 165 knots in three seconds.

As we accelerated down the stroke, the upper left shoulder panel violently flew off the aircraft. "Suspend cat two," shouted the air boss over the radio and 5MC. The panel flew 50 feet straight in the air and landed on the flight deck. Fortunately, the panel did not hit the \$40-million Hornet in tension on cat 2 or injure any flight-deck personnel.

"Combat FOD walk! Combat FOD walk!" announced the air boss, as all available hands conducted a FOD walkdown in the vicinity of cats 1 and 2. Redshirts, greenshirts, blueshirts, yellowsirts, whiteshirts, and purpleshirts all rushed to assist. Frantically, they searched the deck for FOD from the panel, which could damage a jet engine on takeoff or blown into flight-deck personnel. There was no FOD, and the launch continued.

"Five-zero-zero, switch to button nineteen for your rep," called departure on the radio.

"That's strange," I thought, as ECMO 1 switched to strike for checks.

"Five-zero-zero, rep," I recognized as the voice of our trusty operations officer. "A fuselage panel came off the jet during the launch," he reported with concern in his voice from the ship's carrier-air-traffic-control center (CATCC).

"We're fine," ECMO 1 answered. At the same time, I was in the pocket checklist reviewing the damaged-aircraft procedures, while ECMO 2 scanned the backseat flight instruments to verify ECMO 1's report.

"We think you should recover with this cycle just to be on the safe side," our CATCC rep suggested. "Five-zero-zero copies," ECMO 1 responded.

Line of Defense

"Five-zero-zero, five-zero-two. Do you need a visual check?" the CO, who already was airborne, asked on our squadron's tactical frequency.

"No, sir. We're fine. The flight controls and engine instruments check out 4.0," ECMO 1 replied.

"We're here if you need us," the CO ended.

We quickly assumed the responsibilities assigned to us from ECMO 1's brief. ECMO 1 and I reviewed the checklist to make sure the fuselage panel hadn't damaged our rudder and horizontal stabilizer. The pilot and ECMO 2 verified our checks and agreed the flight controls and engine instruments indicated normal operation.


We followed our approach controller's instructions and trapped to an OK 3-wire. All eyes were on our aircraft as we taxied out of the landing area. Once we were chocked, chained and out of the jet, we saw that we had lost our left shoulder panel, and only two of 34 screws had been set and tightened. Two screws on a panel that close to the wing certainly were not enough to withstand the aerodynamic forces of a catapult shot. They also wouldn't have been enough to cope with 420 knots of airflow during the mission portion of our flight.

A great day of flying ended in a moment of humility. Our standard routine had turned into complacency. I had studied every aircraft system and prepared myself for any emergency scenario that could have been posed during my earlier NATOPS flight, but I failed to check for something as simple as panel screws during my evening flight. The aircraft-data book thoroughly recorded all work that was done on the upper left fuselage of aircraft 500. I should have double-checked the panel. More importantly, I should have noticed the obvious loose screws during my standard preflight of the aircraft.

As aircrew, we are the final checkers in a long line of maintenance workers, supervisors, QA inspectors, and plane captains who preflight our



Photo by PH3 Kris White

aircraft. The preflight items in NATOPS are the minimum, not the maximum. As our time and experience in the jet grows, we must continue to augment our preflight inspection with lessons learned from mishap reports and from our own experiences, just as I surely will. 

Lt. Ventura flies with VAQ-140.



By Cdr. Dave Bean

The H-60 series of helos is equipped with a large, electronics-compartment door on the nose of the aircraft, which makes servicing avionics and related gear a snap. The engineers at Sikorsky clearly had ease of maintenance in mind when they designed the door: I'm sure they didn't intend on using it as a device for simulating instrument conditions in flight. Yet, that's exactly where one HS crew found itself one day.

That day offered a break from fixed-wing flight operations, which gave the command a chance to focus its maintenance efforts without the distractions of a regular flight schedule. Following an initial, functional check flight that ended with a low-autorotation Nr reading, the aircraft recovered aboard the CVN. Power-plant troubleshooters made the necessary control adjustments, but as they worked, the showers that are characteristic of the mid-Pacific began to sweep the flight deck. Maintenance control contacted the avionics shop and told them to

place a vinyl cover over the AFCS computer to keep it dry. The young airman who was sent to the deck to do the job talked with the copilot regarding the need for the cover. Although the copilot had asked for the AFCS protection, the pilot said the aircraft would be flying again, and turned away the AEAN.

A short time later the crew was airborne and started another maintenance auto. Following their entry into the maneuver, the electronics-compartment door rotated violently up and aft, crashing into the windshield wipers and the OAT gauge located in the center windscreen. Although the two glass screens in front of each pilot were cracked badly, they remained intact. The plexi-glass in the center screen, however, broke into pieces, which then became missiles with sharp edges, hurtling aft through the cabin.

The crew recovered from the shock of this event and tried to find its way back to the CVN.




Don't Forge Under

Because the door remained fixed against the windscreen, the crew effectively was operating IMC. The crewman in back was able to give verbal directions to the pilots by leaning out the cabin door on the starboard side of the aircraft. The crew still had difficulty finding the ship as they navigated around the isolated showers. As fortune would have it, the ship had established EMCON, and it took some strong words of encouragement for them to answer on the approach frequency. Before receiving radar vectors to the ship, the effects of the rain soon hit the AFCS computer, which failed en route because it had gotten wet. Even though the crew had no flight-control stabilization and no forward visibility, they brought this tale to a happy end by recovering aboard the carrier just a few minutes later.

What's worth learning from this misadventure? Spend time checking the security of your

aircraft, especially following maintenance. Did the AEAN leave the door open? This crew focused only on the area where the power-plants troubleshooters had been working. There wasn't a standard requirement to touch the door latches to ensure security. A visual check of the aircraft was all that was done. Given the position of the latches, they might have appeared to be closed.

The value of wearing helmet visors down was reaffirmed. The plastic shrapnel went whistling through the aircraft cabin and grazed the cheekbone of a crewman working the VATS gear in the after station. He escaped with only a superficial laceration. The plastic just as easily could have hit a less forgiving target only a few centimeters away had the petty officer not been wearing his PPE. The two pilots—neither of who had his visor down—suffered from corneal windburn during their return flight to the CVN. 

Cdr. Bean is the XO of HS-6.

...the electronics-compartment door rotated violently up and aft...



Check the Hood

Crew Resource Management

Ever Had

Situational Awareness

Assertiveness

Decision Making

Leadership

Communication

Adaptability/Flexibility

Mission Analysis



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By Lt. Tracy Maini

It was late summer 1996 when I arrived at VT-28, eager and ready to start my career as a Navy pilot. As I learned my way around the squadron and met with instructors, I had an enlightening conversation with the XO. We spoke of his career as a LAMPS pilot, and of my desire to also fly helicopters. He described the joys and horrors of flying these strange, yet wonderful machines. He also spoke of his experience with vertigo, and of the times I surely would experience it in the years to come. I didn't forget this conversation.

As I progressed through the training command, the FRS, and into my first fleet squadron, I experienced the vertigo the XO had warned me about. A brief case of the leans during my first IMC flight in T-34s. Having to relinquish the controls to a senior pilot on my first moonless-night takeoff from a frigate. Talking my H2P out of an extremis situation less than a half-mile

Vertigo?

If Not, Just Wait

astern of the ship as a young HAC. I learned to recognize and overcome vertigo—or so I thought.

It was my HAC cruise, and we had finished the first port call after our transLant. We did not intend to fly on the day we left port, and none of the crews had rested. However, at 2000, the request came to launch on an SSC mission. My crew was next in the chute, and despite our weariness from our recent liberty, we prepared to fly. Our 2200 brief got pushed back until midnight, for a 0200 launch. I began to feel hesitant about the flight, knowing my exhaustion was equaled by that of my two crewmates. Arrogance, however, prevailed over reason, and I pressed forward.

During our ORM and NATOPS brief, we acknowledged our lack of crew rest rendered the mission a high risk. We agreed that, by using CRM, we could handle the flight. Disorganization and some problems with start made us late getting off the deck. Despite the lack of visible horizon, I decided to expedite getting airborne; we would take off unaided and goggle-up later while in flight. That decision turned out to be one of my worst.

Winds dictated that I, the left-seat pilot, would take off. As I turned away from the well-lit flight deck and pulled power, my head started to spin, like after a night of hard drinking. The lessons I had learned about vertigo came to the forefront, and I told myself to conquer this bout, too. I brief to always admit vertigo.

As I started to climbout I said, "Be with me on the controls." The H2P seemed unresponsive. "Crap," I thought, "when this happened on my last cruise, the HAC took over and saved the day. Who is going to save the day now?" I started to

get scared as I kept losing the battle with the spins.

"I need you to take the controls," I said anxiously to my copilot. As I felt him take the aircraft and saw the altimeter reach 700 feet, a minor, though welcome, sense of calm came over me. My head, however, continued to spin, convincing me the instruments must be wrong.

It was a moonless night, and worse, I looked down and couldn't see lights. "I think we are in the goo," I cursed. I called for pitot heat and checked the OAT. I saw the gyro indicate straight and level, despite my inner ear telling me we were in a turn. I started talking to my OinC, who was in the LSO shack, and I described the situation and asked him to keep a green deck for me. There was concern in his voice as he realized the gravity of my situation. I cross-scanned my copilot's AI and realized mine was definitely caged off...or was it? "Which one is right?" I thought, still spinning and still worried. Using a partial-panel scan, I saw we were straight and level. But my head still spun, and I was scared. I started adjusting my gyro to match my copilot's. I tried switching to alternate on the gyro (to make it a mere repeater of the pilots) and the darn thing flipped sideways and upside down. "Well, that isn't working right," I murmured, and went back to norm and fidgeted with it some more.


So there we were, flying straight and level, while both my head and my gyro told me something very different. The LSO recommended we put on the goggles to see if we could see the horizon. I told him and the crew I was too damn scared to turn away from the gauges and controls to put on the NVGs. "Fellas, we need to bring it



back," I said to the other two guys in my crew.

The flight now had lasted almost 15 minutes, and my head still was swirling. It was dizziness, mixed with the leans, coupled with a gyro in which I had little confidence. I felt about 95 percent sure we were going to fly the bird into the water that night, head spinning all the way. I tried to back up the H2P on the approach to the ship, but I was close to being worthless. The H2P and the AW worked

as a team on the approach and brought us home alive that night. All I could say once we got on deck was, "Thanks, guys." I sat in the helo for a while to calm down. I still was shaking when I went to type the NAVFLIR.

What had happened out there? I couldn't explain it. My head, my inner ear, the fog, the gyro...what was to blame for the 15 minutes of pure terror I had spent in the sky? I thought that I, more than anyone, would always be able to fight and conquer vertigo. But vertigo is always out there, especially on the dark nights, waiting for you to succumb to it. That night, I was on the losing side. 

Lt. Maini flies with HSL-48.

A Note from the Aeromedical Division


Lt. Maini has provided us with a terrific story describing spatial disorientation in detail. The physiological event described in the article is actually a vestibular illusion, most likely the somatogyral illusion, not vertigo. Vertigo is a medical condition caused by an abnormality in the vestibular system. This illusion is the result of a misperception of the magnitude and direction of rotation due to stimulation of the sensors in the semicircular canals of the middle ear.

We orient ourselves in space using visual cues, with additional information provided by position sensors in our limbs and skin, as well as inputs from the middle ear. Our peripheral vision supplies the visual cues. When you can't see the horizon these inputs are reduced greatly.

Lt. Maini not only had a total lack of peripheral visual clues, but also experienced a false sense of rotation caused by a normal pedal turn as the aircraft departed the ship. NATOPS calls for the aircraft to climb into a stable hover, then to pedal-turn 45 degrees before climbing from the ship. The aircraft can safely turn up to 30 degrees per second, greatly exceeding the 2-degree-per-second rate required to start fluid movement in the middle ear. Once the turn stops,

the fluid may continue to move, causing a spinning sensation. If you add an accelerating climb away from the ship, the otolith in the middle ear is stimulated and may provide additional complex inputs to the brain to further disorient the aviator.

Lt. Maini's experience with spatial disorientation is common and was handled competently. Though spatially disoriented, this naval aviator went back to the basics by recognizing the problem, troubleshooting the event, and using crew coordination to return to the ship.

A note for the flight surgeons and physiologists who read this: Spatial disorientation is a normal physiological event that is a significant aviation hazard. Remember to annually brief all our aviators on the subject. This story could be a good teaching tool on how to handle the events. 

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BROWNSHOES IN ACTION COMIX

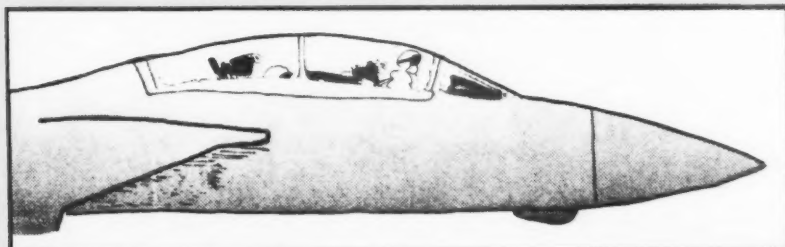
"The kind real aviators like"

Contributed by Lt. Ward Carroll

"Sure, we all know NORDO procedures, but how does a guy convey *really important* information to his wingman after his radios have given up the ghost? Try these!"

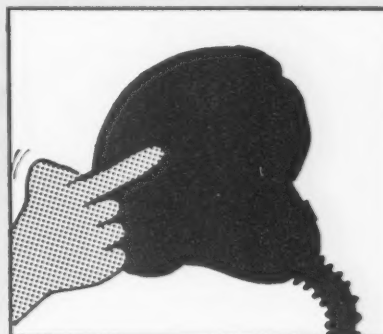


Pilots and NFOs alternately raise and lower seats, giving a see-saw illusion



"Yes, we're NORDO, but as you can see, we haven't lost our sense of humor."

Simulate a gun against head



"Everyone out here is trying to kill me, including you."

Make the "fingers do the walking" sign



"Immediately after we trap, I'm putting in my letter."

Crew does "the wave"



(PILOTS ALWAYS KEEP ONE HAND ON THE STICK.)

"We'd rather be in our dens watching the super bowl"

Ready Room Gouge

**The Probability
of Survival
Is Equal to
the Angle
of Arrival.**



